

Occupational Exposure to Hazardous Chemicals in Laboratories Standard 29 CFR 1910.1450

MODEL WRITTEN CHEMICAL HYGIENE PLAN

This model program was prepared by the U.S. Department of Labor, Occupational Safety and Health Administration and edited by the New Jersey Department of Health, Public Employees Occupational Safety and Health (PEOSH) Program.

NOTE: The information contained in this document is not considered a substitute for any provisions of the PEOSH Act or for any standards issued or adopted by the PEOSH Program.

July 1994

CHEMICAL HYGIENE PLAN FOR

(Facility Name)

The general intent of the chemical hygiene plan for _____
(insert facility name) is:

1. to protect laboratory employees from health hazards associated with the use of hazardous chemicals in our laboratory, and
2. to assure that our laboratory employees are not exposed to substances in excess of the permissible exposure limits adopted by PEOSH. (29 CFR 1910 subpart Z.)

The plan will be available to all employees for review and a copy will be located in the following areas:

This plan will be reviewed annually by _____ (Insert name or position),
and updated as necessary.

I. **STANDARD OPERATING PROCEDURES to be followed In the laboratory relevant to safety and health when using chemicals.**

[These are general procedures of laboratory operation which you likely already have in effect. Section E of Appendix A of 1910.1450 lists the following considerations:]

- A) Accidents, spills
- B) Avoidance of routine exposure
- C) Choice of chemicals
- D) Eating, drinking, smoking, etc...
- E) Equipment and glassware
- F) Exiting
- G) Horseplay
- H) Mouth suction
- I) Personal apparel
- J) Housekeeping
- K) Personal protection
- L) Planning
- M) Unattended operations
- N) Use of hood
- O) Vigilance
- P) Waste disposal
- Q) Working alone

[Section F of Appendix A of 1910.1450 includes additional safety recommendations:]

- A) Corrosive Agents
- B) Electrically powered laboratory apparatus
- C) Fires, explosions
- D) Low temperature procedures
- E) Pressurized and vacuum operations

Attached to this plan in Appendix _____ are standard operating procedures in place at _____ (insert facility name) for the safe handling of chemicals in our laboratory.

[Often this will be your laboratory safety manual which is already in place.]

II. CRITERIA FOR USE OF CONTROL MEASURES TO REDUCE EMPLOYEE EXPOSURE TO HAZARDOUS CHEMICALS

- A) The following operations shall be performed in
LABORATORY HOODS:

- B) The following operations shall be performed in
BIOLOGICAL SAFETY CABINETS:

- C) The following operations shall be performed in
GLOVE BOXES:

- D) Respirators shall be used in accordance with the respiratory protection policy of _____ (insert facility name), and with the PEOSH respiratory protection standard 29 CFR 1910.134. This policy and associated documentation is filed in _____ (insert location) for employee review.

- E) Appropriate protective apparel compatible with the required degree of protection for substances handled shall be used. _____ (insert name or position) will advise employees on glove, gown, eye protection, etc. use. Permeability charts are available _____ (insert location).

- F) Employees will be instructed on the location and use of eye wash stations and safety showers. _____ (insert name or position) is responsible for this instruction.

- G) Employees will be trained _____ (insert how often, for example annually) on the use of fire extinguishers and other fire protection systems.

III. MAINTENANCE OF FUME HOODS AND OTHER PROTECTIVE EQUIPMENT

- A) **FUME HOODS** will be inspected every _____ months by _____ (insert name or position); the adequacy of face velocity will be determined by _____ (Insert method); reports of hood inspections are filed _____ (Insert location) for employee review.

[Repeat the above for each additional major category of protective equipment, such as

BIOLOGICAL SAFETY CABINET, VENTILATION OF STORAGE CABINETS, INTERLOCKS ON HIGH VOLTAGE EQUIPMENT, SAFETY SHOWERS, EYEWASH STATIONS, etc., indicating how often they are inspected, by whom, what is measured, and where the inspection records and checklists are filed.]

IV. EMPLOYEE INFORMATION AND TRAINING

- A) Each employee covered by the laboratory standard will be provided with information and training so that they are apprised of the hazards of chemicals present in their work area. This training will be given at the time of initial assignment and prior to new assignments involving different exposure situations. Refresher training will be given _____ (insert how often).
- B) The training/information sessions shall include:
1. The contents of 1910.1450 and its appendices. A copy of the standard shall be available to employees at _____ (insert location).
 2. The availability and location of the written chemical hygiene plan.
 3. Information on PEOH permissible exposure limits (PELs) where they exist, and other recommended exposure limits.
 4. Signs and symptoms associated with exposure to hazardous chemicals in laboratories.
 5. Location of reference materials, including all MSDSs and NJ Hazardous Substance Fact Sheets received, on the safe handling of chemicals in laboratories.
 6. Methods to detect the presence or release of chemicals (ie. monitoring, odor thresholds, etc.)
 7. The physical and health hazards of chemicals in laboratory work areas.
 8. Measures to protect employees from these hazards including:
 - a) Standard operating procedures
 - b) Work practices
 - c) Emergency procedures
 - d) Personal protective equipment
 - e) Details of the chemical hygiene plan
- C) _____ (insert name or position) is responsible for conducting the training sessions, which will consist of _____ (insert training methods, eg. videotape, slides, lecture, etc.). An outline of the training program is in Appendix _____. [An outline is included in this packet, which can be modified for your use.]
- D) Each employee will sign a form documenting that they have received training. [Sample form included in this packet.]
- E) _____ (insert name or position) is responsible for developing standard operating procedures. _____ (insert name or position) is responsible for the portion of the training on standard operating procedures.

V. PRIOR APPROVAL FOR SPECIFIC LABORATORY OPERATIONS

Certain laboratory procedures which present a serious chemical hazard require prior approval by _____ (insert name or position) before work can begin. For this facility, these procedures include:

- A) Work with select carcinogens
- B) Work with teratogens
- C) Work with acutely hazardous chemicals

These chemicals include:

_____ (insert a list of the acutely hazardous chemicals, for example cyanide).

[If the laboratory does not utilize these classes of chemicals then include a sentence which states "Our laboratory does not at this time use any chemicals which are sufficiently hazardous to require prior approval before they are used."]

VI. MEDICAL CONSULTATION AND EXAMINATION

_____ (insert facility name) shall provide to affected employees medical attention including followup examinations which _____ (insert clinic or physician name) determines is necessary under the following circumstances:

- A) Whenever an employee develops signs and symptoms associated with a hazardous chemical to which he/she may have been exposed, the employee shall be provided an opportunity to receive appropriate medical examination.
- B) Where exposure monitoring reveals an exposure level routinely above the PEOSH action level (AL) (or in the absence of an action level, exposure above the PEOSH permissible exposure level (PEL)) for PEOSH regulated substances for which there are medical monitoring and medical surveillance requirements, medical surveillance shall be established for that employee.

Currently our laboratory uses:

- 1. _____ (Benzene)
- 2. _____ (Formaldehyde)
- 3. _____ (list other substances covered)

which have a separate PEOSH standard with medical surveillance requirements.

If none of these substances is used, indicate that no substances for which PEOSH has medical monitoring requirements are being used.]

- C) Whenever an event takes place in the work area, such as a spill, leak, explosion or other occurrence resulting in the likelihood of a hazardous exposure, the affected employee shall be provided an opportunity for a medical consultation. This consultation is for the purpose of determining the need for a medical examination.
- D) All medical examinations and consultations are provided by _____ (insert physician's name) [or at _____ (insert clinic/hospital name)]. All aspects of these examinations are provided by a licensed physician, or supervised by a licensed physician. These examinations are provided without cost to the employee, without loss of pay, and at a reasonable time and place.

- E) The _____ (insert name or position, eg. Chemical Hygiene Officer) will provide the following information to the physician:
- 1) Identity of the hazardous chemical to which the employee may have been exposed.
 - 2) A description of the conditions of the exposure including exposure date if available.
 - 3) A description of signs and symptoms of exposure that the employee is experiencing (if any).
- F) The written opinion that the employer receives from the physician shall include:
- 1) Recommendations for future medical followup.
 - 2) Results of examination and associated tests.
 - 3) Any medical condition revealed which may place the employee at increased risk as the result of a chemical exposure.
 - 4) A statement that the employee has been informed by the physician of the results of the examination/consultation and told of any medical conditions that may require additional examination or treatment.
- G) The material returned to _____ (insert employer name) by the physician shall not include specific findings and diagnosis which are unrelated to occupational exposure.

VII. RESPONSIBILITIES UNDER THE CHEMICAL HYGIENE PLAN

_____ (insert name of position or individual) is designated as the chemical hygiene officer for _____ (insert facility name).

A chemical hygiene committee shall be formed. The membership list and minutes of their meetings are filed in _____ (insert location) for employee review.

[You may wish at this point to follow the categories in Appendix A of the 1910.1450 and assign some chemical hygiene duties to all staff. The categories used in this appendix are:]

Chief Executive Officer
Department Supervisor
Chemical Hygiene Officer
Laboratory Supervisor
Project Director
Laboratory Worker

[You may wish to designate your existing safety committee or a sub group of that committee as your chemical hygiene committee.]

VIII. ADDITIONAL PROTECTION FOR WORK WITH SELECT CARCINOGENS, REPRODUCTIVE TOXINS, AND CHEMICALS WITH HIGH ACUTE TOXICITY

When any of these chemicals are used, the following provisions shall be employed where appropriate:

- 1) Establishment of a designated area.
- 2) Use of containment devices such as fume hoods or glove boxes.
- 3) Procedures for safe removal of contaminated waste.
- 4) Decontamination Procedures.

[Appendix A of the standard has detailed programs for working with these chemicals. If you are using them, refer to Appendix A as a guide for your detailed procedures.]

Appendix _____ to this plan includes the special procedures used in this laboratory for the use of these chemicals.

LABORATORY STANDARD TRAINING**I. Occupational exposure to hazardous chemicals in laboratories standard (29 CFR 1910.1450)**

- A. Content of the standard and appendices.
- B. Location and explanation of the chemical hygiene plan.
- C. Location of reference materials and material safety data sheets (MSDS).

II. Physical Hazards

- A. Combustible liquid
- B. Compressed gas
- C. Explosive
- D. Flammable
- E. Organic peroxide
- F. Pyrophoric
- G. Unstable (reactive)
- H. Water reactive

III. Health Hazards

- A. Local
 - 1. Irritants
 - 2. Corrosives
- B. Systemic
 - 1. Toxics
 - a. Acute/Chronic
 - b. Nervous System Effects
 - c. Respiratory System Effects
 - d. Reproductive System Effects
 - 2. Sensitizers

IV. Route of Exposure

- A. Inhalation
- B. Skin Absorption
- C. Ingestion

V. Amount of Absorption

- A. Gases/Vapors
- B. Particulates
 - 1. Dust
 - 2. Mist
 - 3. Fume

VI. Dose

- A. Work Practices
- B. Personal Hygiene
- C. Weight
- D. Personal Protective Equipment
- E. Environmental Controls

VII. Duration of Exposure**VIII. Exposure Limits Including PELs**

- A. Definition
- B. Established by:
 - 1. Chemical similarity
 - 2. Animal studies
 - 3. Human studies

IX. Air Sampling

- A. Required by PEOSH
- B. Employee reports of illness
- C. Confined space work
- D. Other

X. Response

- A. Age
- B. Gender
- C. Body size
- D. Health status
- E. Personal habits
- F. Other exposures

XI. Employee Concerns

- A. Symptoms limited/many causes
- B. Documentation
- C. Referral
- D. Refusal to work

XII. Facility Specific Standard Operating Procedures

TRAINING DOCUMENTATION

TOPIC: _____ **DATE:** _____
(Attach outline of material covered)

NAME OF INSTRUCTOR: _____ **POSITION:** _____

NAME

DEPARTMENT